



**Boulder County
Community
Planning & Permitting
Publications**

Ignition- Resistant Construction

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Ignition-Resistant Construction

Per Section R327 of the 2015 Boulder County Building Code Amendments for One and Two Family Dwellings.

R327.1 Requirements based on locations in wildfire zones.

R327.1.1 General. Unless other more restrictive requirements, such as those requiring an approved wildfire mitigation plan imposed through Site Plan Review or other review processes required by the Boulder County Land Use Code, apply, this section shall be applicable to all new buildings, additions and repairs, including buildings designed and constructed in accordance with the *International Building Code*.

Exceptions:

1. One-time additions not exceeding 200 square feet in floor area.
2. Construction involving only new decks or additions or repairs to existing decks need not comply with all of the defensible space requirements of Section R327.4.13, provided that defensible space is provided around the deck for Zone 1 in accordance with the defensible space standard and a weed barrier and gravel is provided on all sides of the deck in accordance with Section R327.4.13.1.

R327.2 Wildfire Zones Defined. For the purpose of this code, the unincorporated portion of Boulder County is divided into wildfire zones, which shall be known and designated as Wildfire Zone 1 and Wildfire Zone 2. The wildfire zones shall include such territory or portions of the unincorporated county as shown in Figure R327.2, the Wildfire Zone Map.

R327.2.1 Buildings Located in More Than One Wildfire Zone. A building or structure that is located partly in one wildfire zone and partly in another shall be considered to be in the wildfire zone in which the more restrictive conditions apply.

R327.2.2 Moved Buildings. Any building or structure moved within or into any wildfire zone shall be made to comply with all the requirements for new buildings in that wildfire zone.

R327.3 Definitions. The following words and terms shall, for the purpose of this Section, have the meanings shown herein.

DEFENSIBLE SPACE. An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations to occur.

DEFENSIBLE SPACE STANDARD. The Colorado State Forest Service publication, "Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones, 2012 Quick Guide" is an approved standard for meeting the defensible space requirements of Section R327.4.14 or for the creation of a wildfire mitigation plan, and can be found online at: <http://csfs.colostate.edu/csfspublications/> under Wildfire Mitigation & Education, Resources for Homeowners & Landowners.

FIRE-RETARDANT-TREATED WOOD. Wood meeting the requirements of Section R802.1.5 of the IRC or Section 2303.2 of the IBC.

HEAVY TIMBER CONSTRUCTION (Type IV, HT). Construction with wood framing members, columns, flooring and roof decks sized in accordance with IBC Section 602.4.

IGNITION-RESISTANT BUILDING MATERIAL. Ignition-resistant building materials shall comply with any one of the following:

1. **Extended ASTM E 84 testing.** Material shall be tested on all sides with the extended ASTM E 84 (UL 723) test or ASTM E 2768, except panel products shall be permitted to test only the front and back faces. Panel products shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm). Materials that, when tested

in accordance with the test procedures set forth in ASTM E 84 or UL 723 for a test period of 30 minutes, or with ASTM E 2768, comply with the following:

- 1.1 Flame spread. Material shall exhibit a flame spread index not exceeding 25 and shall not show evidence of progressive combustion following the extended 30 minute test.
- 1.2 Flame front. Material shall exhibit a flame front that does not progress more than 10½ feet (3200 mm) beyond the centerline of the burner at any time during the extended 30-minute test.
- 1.3 Weathering. Ignition-resistant building materials shall maintain their performance in accordance with this Section under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in the following standards, as applicable to the materials and the conditions of use:
 - 1.3.1 Method A "Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing" in ASTM D 2898, for fire-retardant-treated wood, wood-plastic composite and plastic lumber materials.
 - 1.3.2 ASTM D 7032 for wood-plastic composite materials.
 - 1.3.3 ASTM D 6662 for plastic lumber materials.
- 1.4 Identification. All materials shall bear identification showing the fire test results.

Exception: Materials comprised of a combustible core and a noncombustible exterior covering, comprised of either aluminum at a minimum 0.019 inch (0.48 mm) thickness or corrosion-resistant steel at a minimum .0149 inch (0.38 mm) thickness shall not be required to be tested with a ripped or cut longitudinal gap.

2. Noncombustible material. Material that complies with the requirements for noncombustible materials in this section.
3. Fire-retardant-treated wood. *Fire-retardant-treated wood* labeled for exterior use.
4. Fire-retardant-treated wood roof coverings. Roof assemblies containing fire-retardant-treated wood shingles and shakes which comply with the requirements of Section R902 of this code and classified as Class A roof assemblies as required in Section R902 of this code.
5. Materials currently approved by the California Department of Forestry and Fire Protection, Office of the State Fire Marshal. Approved materials may be searched for via the following link: <https://osfm.fire.ca.gov/divisions/fire-engineering-and-investigations/building-materials-listing/bml-search-building-materials-listing/>.

Search categories include **8110-Decking Materials**, **8120-Exterior Windows**, **8140-Exterior Sidings and Sheathings**, **8150-Exterior Doors** and **8160-Under Eave**.

LOG WALL CONSTRUCTION. A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is at least 6 inches (152 mm).

NONCOMBUSTIBLE. As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this Section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame spread index obtained according to tests conducted as specified in ASTM E 84 or UL72.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

WILDFIRE MITIGATION PLAN. A *wildfire mitigation plan* addresses the appropriate site location for structures, construction design and the use of ignition-resistant building material, defensible space and fuel reduction around structures, driveway access for emergency vehicles and an emergency water supply for firefighting in accordance with Article 4-804(C).(12.) of the Boulder County Land Use Code.

WILDFIRE PARTNERS. Wildfire Partners is a collaborative Boulder County wildfire hazard mitigation program for homeowners that helps to reduce the risk of damage to homes from wildland fire. In Wildfire Partners, homeowners take personal responsibility for preparing their home and property for wildland fire and actively participate in an on-site assessment with a wildfire mitigation specialist. When participants complete their customized wildfire mitigation plan and pass their follow up inspection, they receive a Wildfire Partners Certificate and may be eligible for financial assistance (www.wildfirepartners.org).

R327.4 Restrictions in Wildfire Zone No. 1. Buildings constructed in Wildfire Zone 1 shall comply with this section.

R327.4.1 Roof covering. Roof covering materials installed in Wildfire Zone 1 shall be listed Class A roof covering materials or be constructed as a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof decking, the space at the eave ends shall be fire stopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

R327.4.1.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72-pound mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 running the full length of the valley.

R327.4.2 Gutters and downspouts. Gutters, downspouts and gutter covering devices shall be constructed of noncombustible material. Gutters shall be provided with an approved means to prevent the accumulation of leaves, pine needles and debris in the gutter.

Exception: Buildings meeting one of the exceptions to Section R401.3.1 of this code may be constructed without gutters and downspouts.

R327.4.3 Spark arrestors. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used shall be protected with a spark arrester. Spark arresters shall be constructed of woven or welded wire screening of 12 USA standard gauge wire (0.1046 inch)(2.66 mm) having openings not exceeding ½ inch (12.7 mm). The net free area of the spark arrester shall not be less than four times the net free area of the outlet of the chimney.

R327.4.4 Fences, retaining walls and similar appurtenances. Fences, retaining walls or other appurtenances that connect to buildings must be constructed of noncombustible materials or ignition-resistant materials for a distance of 3 feet beyond the exterior walls.

R327.4.5 Protection of eaves. The leading edge of the roof at the fascia must be finished with a metal drip edge so that no wood sheathing is exposed. Eaves, fascias, and soffits, covered decks or covered porch ceilings shall be protected on the enclosed underside by one of the following materials or methods:

1. Noncombustible materials.
2. Ignition-resistant materials.
3. Materials approved for a minimum of 1-hour fire-resistance-rated construction.
4. 2-inch-thick nominal dimension lumber.
5. 1-inch-thick nominal fire-retardant-treated wood.
6. ¾-inch-thick nominal fire retardant-treated plywood labeled for exterior use.
7. Any materials permitted by this code.

Exceptions:

1. Vinyl or plastic soffits, fascia or trim are not permitted.
2. Rafter tails or roof beam ends may be exposed if they are heavy timber having minimum dimensions not less than 6 inch nominal in width and not less than 8 inches nominal in depth.

R327.4.6 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction.
4. Fire-retardant-treated wood labeled for exterior use on the exterior side.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

Exception: *Trim* is not required to meet the materials requirements for exterior walls.

R327.4.7 Unenclosed under floor protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section R327.4.6. For decks, see Section R327.4.8.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood labeled for exterior use.

R327.4.8 Decks, appendages, and projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following material:

R327.4.8.1 Deck surface: *Non-combustible* material, approved wood thermoplastic composite lumber with an ASTM E84 flame-spread index no greater than 200, *ignition-resistant building materials* or any *approved Class A roof assembly*.

R327.4.8.2 Deck framing: Deck framing shall be constructed of one of the following:

1. 1-hour fire resistance-rated construction
2. *Heavy timber* construction.
3. *Approved noncombustible materials*.
4. *Fire-retardant-treated wood* labeled for exterior use.
5. *Ignition-resistant building materials*.
6. Wood with a minimum nominal thickness of at least 2 inches for joists and 4 inches for beams and columns or posts.

R327.4.9 Exterior windows and glazing. Exterior windows, window walls, glazed doors, windows within exterior doors, and skylights shall be tempered glass, multi-layered glazing, glass block, or have a fire protection rating of not less than 20 minutes. Unless they are part of a fire-rated assembly, window frames and sashes may be of any material permitted by this code.

Exception: Windows with unreinforced vinyl frames or sashes are not permitted.

R327.4.10 Exterior doors. Exterior doors and garage doors shall be approved noncombustible construction, metal clad, solid core wood not less than 1 3/4 inches in thickness, or have a fire protection rating of not less than 20 minutes. Windows within doors and glazed doors shall be in accordance with Section R327.4.9.

Exception: Vehicle access doors.

R327.4.11 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inches or shall be designed and approved to prevent flame or ember penetration into the structure. Gable end and dormer vents shall be located at least 15 feet from property lines and shall be designed and approved to prevent flame or ember penetration into the structure. Underfloor ventilation openings shall be located as close to grade as practical.

R327.4.12 Detached accessory structures. Detached accessory structures shall have exterior walls constructed in accordance with Section R327.4.6.

R327.4.12.1 Underfloor areas. Where the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas enclosed to within 6 inches of the ground with exterior wall construction in accordance with Section R327.4.6 or underfloor protection in accordance with Section R327.4.7.

Exception: The enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or *heavy timber construction* or *fire-retardant-treated wood* on the exterior side. The *fire-retardant-treated wood* shall be labeled for exterior use.

R327.4.13 Defensible space. Individual buildings or structures on a property must be provided with a fuel modification zone in accordance with the *defensible space standard*. When additions requiring a permit occur, both existing and new structures must be provided with *defensible space* in accordance with this section. The fuel modification zone must be maintained at all times.

Exceptions:

1. The implementation and completion of an *approved wildfire mitigation plan* prior to final inspection approval for the project.
2. Participation in the *Wildfire Partners* program and the issuance of a *Wildfire Partners* certificate prior to final inspection approval for the project.

R327.4.13.1 Weed barrier and gravel or crushed rock. A weed barrier and gravel or crushed rock not less than 3/4-inch in diameter applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building to extend at least 3 feet beyond the exterior walls and at least 2 feet beyond the driplines of decks, bay windows and other eaves and overhangs.

Exception: Noncombustible surfaces, such as poured concrete or asphalt, or other *approved noncombustible* materials, such as a weed barrier and brick, concrete or stone pavers, may be used to satisfy this requirement.

R327.5 Restrictions in Wildfire Zone 2. Buildings constructed in Wildfire Zone 2 shall comply with this section.

R327.5.1 Roof covering. Roof covering materials installed in Wildfire Zone 2 shall be listed Class A roof covering materials or be constructed as a Class A roof assembly. For roof coverings where the profile allows a space between the roof covering and roof

decking, the space at the eave ends shall be fire stopped to preclude entry of flames or embers, or have one layer of 72-pound (32.4 kg) mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 installed over the combustible decking.

R327.5.1.1 Roof valleys. When provided, valley flashings shall be not less than 0.019 inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72-pound mineral-surfaced, non-perforated cap sheet complying with ASTM D 3909 running the full length of the valley.

Exception: Buildings meeting one of the exceptions to Section R401.3 of this code may be constructed without gutters and downspouts.

R327.5.3 Spark arrestors. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used shall be protected with a spark arrester. Spark arresters shall be constructed of woven or welded wire screening of 12 USA standard gauge wire (0.1046 inch)(2.66 mm) having openings not exceeding ½ inch (12.7 mm). The net free area of the spark arrester shall not be less than four times the net free area of the outlet of the chimney.

R327.5.4 Fences, retaining walls and similar appurtenances. Fences, retaining walls or other appurtenances that connect to buildings must be constructed of noncombustible materials or ignition-resistant materials for a distance of 3 feet beyond the exterior walls.

R327.5.5 Protection of eaves. The leading edge of the roof at the fascia must be finished with a metal drip edge so that no wood sheathing is exposed.

Eaves, fascia, and soffits, covered decks or covered porch ceilings shall be protected on the enclosed underside by one of the following materials or methods:

1. Noncombustible materials.
2. Ignition-resistant materials.
3. Materials approved for a minimum of 1-hour fire-resistance-rated construction.
4. 2-inch-thick nominal dimension lumber.
5. 1-inch-thick nominal fire-retardant-treated wood.
6. ¾-inch-thick nominal fire retardant-treated plywood labeled for exterior use.
7. Any materials permitted by this code.

Exceptions:

1. Vinyl or plastic soffits, fascia or trim are not permitted.
2. Rafter tails or roof beam ends may be exposed if they are heavy timber having minimum dimensions not less than 6 inch nominal in width and not less than 8 inches nominal in depth.

R327.5.6 Exterior walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Noncombustible materials approved for a minimum of 1-hour fire-resistance-rated construction on the exterior side.
2. Approved noncombustible materials.
3. Heavy timber or log wall construction.
4. Fire-retardant-treated wood labeled for exterior use on the exterior side.
5. Ignition-resistant materials on the exterior side.

Such material shall extend from the top of the foundation to the underside of the roof sheathing.

Exception: Trim is not required to meet the materials requirements for exterior walls.

R327.5.7 Unenclosed under floor protection. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section R327.4.6. For decks, see Section R327.4.8.

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams, and supporting walls are protected as required for exterior 1-hour fire-resistance-rated construction or heavy timber construction or fire-retardant-treated wood labeled for exterior use.

R327.5.8 Decks, appendages, and projections. Decks and other unenclosed accessory structures attached to buildings shall be constructed of the following materials:

R327.5.8.1 Deck surface: Non-combustible material, approved wood thermoplastic composite lumber with an ASTM E84 flame-spread index no greater than 200, ignition-resistant building materials or any approved Class A roof assembly.

R327.5.8.2 Deck framing: Deck framing shall be constructed of one of the following:

1. 1-hour fire resistance-rated construction
2. Heavy timber construction.
3. Approved noncombustible materials.
4. Fire-retardant-treated wood labeled for exterior use.
5. Ignition-resistant building materials.
6. Wood with a minimum nominal thickness of at least 2 inches for joists and 4 inches for beams and columns or posts.

Sections R327.5.9 and R327.5.10 have been omitted.

R327.5.11 Vents. Attic ventilation openings, foundation or under-floor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inches or shall be designed and approved to prevent flame or ember penetration into the structure. Gable end and dormer vents shall be located at least 15 feet from property lines and shall be designed and approved to prevent flame or ember penetration into the structure. Under-floor ventilation openings shall be located as close to grade as practical.

R327.5.13 Weed barrier and gravel or crushed rock. A weed barrier and gravel or crushed rock not less than 3/4-inch in diameter applied at least 2 inches thick must be installed beneath decks, unenclosed floors, and around the perimeter of the building to extend at least 3 feet beyond the exterior walls and at least 2 feet beyond the driplines of decks, bay windows and other eaves and overhangs.

Exception: Noncombustible surfaces, such as poured concrete or asphalt, or other approved noncombustible materials, such as a weed barrier and brick, concrete or stone pavers, may satisfy this requirement.

Boulder County Wildfire Zone Map



BOULDER COUNTY WILDFIRE ZONE MAP

